GreenCityStreets.com – An internet application for increasing public involvement in public transportation

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Abstract

GreenCityStreets.com is an integrated Internet application consisting of a game, best practices library and social network. It was developed to help residents become actively involved in helping improve their local public transport service. The game and best practices are designed to educate residents, while the social network allows them to suggest and comment on specific ideas for improving public transport. The goal of educating residents is to improve the quality of ideas generated and to communicate the importance of seemingly small improvements. The goal of the forum is to create communities of people willing to actively help improve local public transport service (by providing political support, ideas, and serving as advocates). A prototype application was developed and tested in Vienna (Austria) in 2011. The prototype software was successful, but the application failed to attract a critical mass of users. The paper presents lessons learned and recommendations for similar projects. The main lesson learned was the importance of having a real client for the application. The application is on line at www.greencitystreets.com and the developers are seeking opportunities for testing it at a public transport operator.

GreenCityStreets.com – An Internet application for increasing public involvement in public transportation

1. Introduction

GreenCityStreets is an integrated internet-based application designed to improve the public involvement process by educating people about sustainable transportation and providing them with a forum to debate ideas for improving local transport infrastructure and services.

The approach is based on the idea that urban transportation is complex and therefore people will be able to provide more valuable input if they learn about the subject as part of the involvement process. This approach has been used successfully in traditional project-based public involvement processes. The object of this research was to translate the learning-based approach to an Internet application and make the process continuous rather then project-based.

The research project consisted of creating an educational game, a best practices library and a social network focused on public transportation to test the general concept. The three elements were combined into an integrated application called GreenCityStreets (http://www.greencitystreets.com). The prototype project was partially subsidized by ZIT, the city of Vienna's technology support agency. Development of the application began in late 2010 and beta versions were placed online starting in late January 2011.

This report describes the concept behind the application, the application's development and implementation, project results and lessons learned, and finally conclusions and recommendations for further research.

2. Concept/Literature

The main idea behind GreenCityStreets is to improve the public involvement process for urban transport infrastructure and services using internet-based applications.

The idea of using these new information technologies to "rethink the role of citizens" is very important and is being actively researched; it is unclear what the right approach will be, but it is clear that new IT and communications technologies will play an increasing role in all aspects of government. [*1*] Importantly, the main goal isn't about data, culture, accountability or efficiency, though they all matter, it's about building a community to work together to solve problems. [*2*]

This section presents a very brief summary on the importance of public involvement and then describes how GreenCityStreets approached three main difficulties in public involvement: complexity, apathy and empowerment.

2.1 Public Involvement

Public involvement is fundamental to a democratically based planning process. Most countries require some form of public involvement in the planning and decision-making for major infrastructure projects, new and changed services, and regulatory actions.

Effective public involvement processes are extremely beneficial. A well run process can help improve projects by (1) providing creative new ideas; (2) increasing public support

for project implementation; and (3) confirming trust in government agencies charged with implementing the project.

But, creating and managing public involvement processes is very difficult. They require both careful administration and, more importantly a set of intangible elements including: establishing a sense of fairness, of really listening to the public and creating a social environment with trust and respect for different ideas. These are difficult to achieve in the best of conditions, but in the time and budget sensitive environment of major infrastructure projects are very difficult to achieve.

2.2 Addressing Complexity with Education

One of the most difficult aspects of the public involvement process is the technical and institutional complexity of many projects. This complexity, if handled clumsily, can foster a sense of distrust that poisons the entire process. And, a poisoned process, in many cases, leads to project delays (e.g. caused by lawsuits) and/or selection of less than optimal technical solutions (e.g. we don't believe that this soundproofing solution will work so move the project away from where it's really needed).

Education is necessary to help address the problem of complexity. As part of the CalTrain San Francisco Extension project (1997) a new process was developed to help educate the public about the project and design choices. The Design Options Screening (DOS) process provided the public with three levels of information (newsletter summary, summary report and detailed technical reports) all oriented towards making a series of pre-defined design decisions.

Participants were asked to comment on their preferred approach to making these decisions (e.g. cut-and-cover tunnel along alignment "A" or bored-tunnel on alignment "B"). The process both helped to focus public comments and enabled the public to speak clearly about the options. The process was used twice, since the public were able to suggest many new alternatives based, at least partly, on what they learned during the first round of decision-making. [*3]*

Another important aspect of complexity is that, rather than digging into the details of complex problems, many people seize on "common sense" and "obvious" solutions. For example, it is obvious that the best way to solve a parking problem is to build more parking. However the best solutions to parking problems are often counter-intuitive, or at least counter-intuitive to many people. [*4*]

Obvious solutions are especially problematic in public decision-making processes because they make good sound bites in political discussions. It's easy to defeat ideas that would be better for everyone by invoking "common sense".

Finally, an important goal of public involvement is to obtain good ideas from residents (today this is called *crowdsourcing*). In urban transport planning crowdsourcing works best when a basic level of technical knowledge (e.g. understanding what is feasible, what works in similar situations, etc.) is combined with a detailed understanding of the local situation. It is here where an open planning process can help significantly improve project design and implementation.

In summary, education is important to the public participation process. Unfortunately, education can be handled poorly by planners if they fail to provide honest information, withhold information or simply not provide helpful information. These approaches were

never good, but they are extremely dangerous today given the public's ability to self-educate using the Internet.

GreenCityStreets' main goal is to educate residents about how to improve public transport service using modern internet-based applications. The idea is to be proactive: create a fun way to learn about public transport (a computer game) and link the game to a best practices library so people can learn more. The game and library are described below.

2.3 Addressing Apathy with Involvement

Apathy is another major problem for public involvement. Public processes tend to attract only those people most directly impacted by the project. But most projects impact many others indirectly and/or in ways they do not fully understand (a problem linked to complexity). For these reasons public decision-making processes are often over influenced by special interest groups.

The best examples are major infrastructure projects that have negative local impacts but convey benefits to people throughout a region. While a project's negative impacts must be mitigated, neighbourhood groups should not have veto power over important regional projects. What's needed is a process that helps identify the best project and the most appropriate mitigation measures.

A specific example is removing parking to create a public transport lane. Shop owners along the street will come in force to oppose this idea while the many people riding the bus (who would benefit from shorter travel times and more reliability) do not get involved. What's needed is a process that enables more people to be heard.

The non-participation of those indirectly impacted by projects, those who don't understand the benefits of projects, or who don't even know a project is being considered, is a widely understood problem in public involvement. Traditional public information programs use many strategies to address this non-participation but for many non-participants it's a question of balance: they do not think that they benefit enough from the project to devote their limited free time to the too often boring, long and poorly managed public decision-making process.

This sounds like an ideal situation for internet-based social networking. Social networking enables people to learn and participate on their own schedules without geographical proximity (i.e. attending meetings). The goal of GreenCityStreets is to provide a forum to help facilitate participation in the public decision-making process.

The integrated approach: game + best practices library + forum, helps address the problem of attracting those who only benefit in a limited way from a project by: first, using the game to attract people to the forum where they can learn about real local projects that might impact them; and, second by educating these people about the benefits of these projects (using the game and library). Since the forum includes the standard social networking features it's easy to participate and make your voice heard. The forum is described in more detail below.

2.4 Improved Decision-making Through Public Empowerment

The developers of GreenCityStreets believe that fostering a more inclusive and informed public involvement process will help improve decision-making in the planning and implementation of urban transport services. The integrated approach provides a structure for improved decision-making, but, as we learned in the research, the technical structure alone is not sufficient to ensure that improved decision-making will happen.

The application needs to be part of an eco-system designed to ensure that the public is appropriately empowered in the decision-making process. This eco-system consists of the processes and approaches used by an organization to channel, use and provide feedback on public input.

The revolution in communications and information technology is forcing all types of organizations to re-think how they obtain and use customer input. Quite simply, new technology has transferred a certain amount of power to customers. New communications technologies make it possible for customers to positively or negatively impact businesses and change the way they operate. The same processes are at work within organizations where technologies are being used to help empower employees to more fully participate in decision making.

As these trends continue the question of customer empowerment is being slowly addressed in business and government, but since we are in the early stages of a revolution, much is still unknown.

However, some good practices for using communications and information technology to help improve relationships with customers known as Customer Relationship Management (CRM) have been developed. [*5*] These good practices include:

- encouraging customers to provide feedback and ideas:
- adopting ideas suggested by customers;
- responding immediately to complaints;
- providing detailed information about products;
- communicating through a wide variety of channels, and
- building relationships (which also help foster repeat business).

As this list shows, these are not particularly novel approaches, but rather approaches that can be more easily implemented using new technologies. Many government agencies are experimenting with new technologies to improve communications with their customers, but the process is complex. [*6*] [7]

GreenCityStreets was built to test the concept of combining education with public input on the Internet. The original idea was that it could be a stand-alone application. But, after testing the prototype we recognize that to be successful it must be implemented in a supportive eco-system, for example by a public transport agency or non-governmental agency (see lessons learned).

The following sections describe the GreenCityStreets building blocks and the process of developing GreenCityStreets.

3. Developing GreenCityStreets

GreenCityStreets consists of a game, best practices library, social network and a website that integrates these applications. Both the best practices library and the social network were created using free software available on the Internet. The game was developed specifically for the project. This section summarizes the concept behind GreenCityStreets and how each part of the application was developed.

3.1 GreenCityStreets: Concept and Prototype Development

GreenCityStreets began as an idea for a wiki-based library of best practices for technicians. Next came the idea of developing an educational game to encourage non-technical people to learn about the subject. This was followed by a social network designed to encourage people to do something with what they learned. [*6*] [8] [9]

In June 2010 the author prepared a proposal for developing a prototype application for the City of Vienna's Die Stadt 2020 Call for Projects a program designed to support projects the growing challenges faced by cities throughout the world. [10] The GreenCityStreets proposal was selected for funding and was also awarded a prize for being the most innovative project submitted. The city of Vienna provided 45% of the 85,000 Euro project budget.

The proposal was originally called BusMeister because the initial application focused on improving public transport by implementing public transport priority measures. However, since the goal was to extend the application to other modes of transport and street design if the prototype was successful, the name was changed to GreenCityStreets. Another reason for changing the name was feedback received from public transport agency managers suggesting that including "bus" in the title was limiting for agencies that also operated rapid transit or trams.

Development of the application began in November 2010. The strategy for launching a website or application is an important decision. In the case of GreenCityStreets the approach was to place the best practices library on line immediately (so that others could begin adding information to the wiki) and to release the game and forum once they had reached an appropriate level of development. All parts of the GreenCityStreets prototype were on-line at the end of March 2011. The process of developing and launching each part of GreenCityStreets is described below.

The team prepared an evaluation of the prototype GreenCityStreets application in July 2011 and the Die Stadt 2020 project is officially finished. However, the application will stay on-line and the developers plan to improve and extend it.

3.2 Best Practices Library

The original concept for the best practices library was to develop a wiki that could be used by professionals and non-professionals to learn more about public transport operations.

A wiki is a website that provides special tools enabling anyone to edit the website pages and to create new pages. The word wiki comes from the Hawaiian word wiki (quick), which was used in the initial wiki-based applications. [*11*] The most familiar Web 2.0 wiki application is Wikipedia, the open source on-line encyclopedia.

The idea behind wikis is that “crowd sourcing” (i.e. the idea that everyone together knows more than one person alone – even if that person is an expert) can provide accurate information. For GreenCityStreets the idea was to create a multi-level wiki, starting with general information geared to non-professionals linked to pages which provided more details and references targeted towards professionals. The goal was to create a structure that would attract professionals who would add information about their speciality to the wiki. The professionals would benefit from publicity generated by exposure in the wiki.

The wiki was developed using Wikispaces, a free application that enables users to easily create wikis for private or public use. Wikispaces is very easy to use for authors and administrators. The GreenCityStreets wiki was placed on line as pages were developed (http://busmeister.wikispaces.com/). The wiki is illustrated in Figure 1.

Figure 1: Best Practices wiki

Work began on best practices library wiki in November 2010. The first step was to develop a structure for the pages and information needed. The author developed this structure, prepared template wiki pages and began adding information.

Once there was enough information in the wiki to illustrate the idea, the author used social networking (e.g. LinkedIn groups) and personal e-mails to tell people that the wiki

existed and that contributions were welcome. A (very) few people became involved adding information over the course of the next three months (including one quite active volunteer). Several of the pages were translated into German by one of the project partners.

As the project progressed the concept for the best practices library was reconsidered and a decision was made to create standard web pages for the top level information and link these pages to wiki-based pages presenting details. This change was made because the target audience for the upper level pages (non-professionals) would not need to add or modify information and therefore the wiki software was not necessary. Not using the wiki software made it possible to easily create simpler and more interesting web pages for the top level. These pages start with the clear title “Improve Public Transport.” (http://wiki.greencitystreets.com/improve-public-transport/). Figure 2 illustrates this page.

Figure 2: GreenCityStreets Best Practices Library Page

The upper level pages were created using Wordpress, a popular blogging application available free on the internet. Wordpress is actually a simple content management system. This means that it is easy to create a set of non-changing web pages as well as dynamic pages (e.g. traditional blogs). Due to its popularity many features and design elements are available for use on Wordpress-based blogs.

Another advantage of using the Wordpress application was its ability to link the library directly to a blog. A blog, which is short for "web log" (or diary), is a webpage where authors regularly post information, in this case information about news and events related to public transport operations. This dynamic information makes the website more useful and helps improve its ratings in search engine rankings (driving more visitors to the website). (http://wiki.greencitystreets.com/)

The best practices library currently contains 11 Wordpress pages and 55 wikispaces pages. The wiki attracts between 30-40 unique page views per day. While this is a good result given the lack of a sponsoring agency, the effort cannot really be considered a success since only a very small group of people provided all the content and almost no one is really using the information. These issues are described in more detail in Section 4 Application Evaluation.

3.3 BusMeister Game

The goal of the BusMeister game was to teach non-professionals how to improve public transport operations in a fun way. The idea was that if non-professionals understood the importance of, what appear to them small, changes to public transport service they would become more proactive in supporting these changes. A secondary goal for the game was to attract people to the website so they would use the forum and best practices library.

The BusMeister game was created by Platogo GmbH, an internet game company based in Vienna, under contract to the project. Platogo began working on the game in November 2010. Developing BusMeister proved to be a significant challenge.

There are many games that have been developed that model city planning and transport planning including Transport Tycoon and SimCity. [*6]* [8] [*12*] The key problem in game development was how to make what is essentially an engineering design process *fun*. Another way to put it is: what's fun about running a simulation? In addition to this design problem the developers needed to make the game realistic so that it could be educational.

Figure 3: BusMeister Game Introductory Screen

The process began with the author presenting a draft description of how the game should work to the Platogo developers (who had no experience in transportation). Over the course of the next four months Platogo gradually created a game and added features in a back-and-forth process with the project team.

In a nutshell, the BusMeister game is designed to illustrate how public transport works. Players add measures (e.g. bus lanes) to the "street" to improve public transport operations. They receive points for improving public transport user satisfaction, reducing costs and improving automobile user satisfaction. It was important to include automobile user satisfaction to teach players the need for considering all users. Figure 4 illustrates the game.

A demonstration version of the game was available in mid-January 2011. This version was publicized via professional social networks and at several conferences. The development team also met with the WienerLinien (Vienna's local public transport agency) during this period to obtain detailed feedback about the game and application in general. The WienerLinien comments were extremely helpful to the game development. Feedback on the demonstration version was generally positive.

Figure 4: BusMeister Game Screen Shot.

Game development continued during February and March by responding to problems identified with the demonstration version, adding additional features, and creating the playing-environment (e.g. level structure, final graphics, Facebook connections).

The final version of BusMeister went on-line in mid-March 2011. It has 12 levels starting from a very simple street where players only need to adjust bus stops to make customers happy, and ending with a very complex street where players can add many different measures and adjust bus operations settings to improve service. The game can be played on the GreenCityStreets website or as a Facebook game. It includes a social networking aspect so players can see how well they are doing and/or share results on Facebook.

Many people played the game (there were 463 registered users on facebook as of July 25, 2011). There were 885 unique page views of the game referred from the GreenCityStreets website and the average time spent by those users was 3:34 minutes.

According to feedback most people liked the game but also found it too hard to start playing. Once players fully understood the user interface and reached an upper level they found it quite fun, but too few players reached this level. These issues are described in more detail in Section 4 Application Evaluation.

The BusMeister game can be played at: http://www.greencitystreets.com/busmeister.

3.4 Social Network: GreenCityStreets Forum

The GreenCityStreets Forum is a social networking platform designed to encourage formation of local groups that will actively help make their local transport systems more sustainable. The goal is to create communities of people willing to do more than simply clicking on a “Like” button.

The Forum allows users to suggest improvements for their local transport system and then allows other users to comment, “Like”, add more information, etc. There are three important objectives for the social network:

- **Crowdsourcing** – residents often understand local issues better than planners, the forum encourages them to suggest ideas and allows others to provide more information;
- **Political Support** – many good ideas lack political support (see Section 2.3), the forum allows people to express support for ideas, thus providing political support for good ideas even when the people cannot attend meetings in city hall;
- **Committed Customers** – transport agencies need advocates in the real and virtual worlds. The forum allows local residents to carry on a conversation about transport where they (educated with help from the game and library) provide information to others about public transport. Furthermore, the forum gives these advocates an opportunity to organize real activities to help improve local transport (e.g. clean-up days).

As the definitions of these objectives show, to be fully functional the Forum needs to be embedded in a supportive eco-system. More specifically, there needs to be an organization (e.g. transport agency) that believes in the idea of actively involving the public in helping improve operations and is willing to dedicate sufficient resources to facilitating this type of public involvement (similar to what innovative private sector companies are doing, see Section 2.4).

Figure 5 illustrates the GreenCityStreets Forum. The forum presents ideas from users for improving public transport. These ideas can be sorted by city, route number, user who suggested the idea, and several other ways. The ideas are also presented on a Google Maps application on the page. The Forum was built on the Facebook platform. People wishing to actively participate (i.e. add ideas, comment on or “Like” existing ideas) must log-in via Facebook (although anyone can read forum ideas and comments).

The Forum is similar to sites like seeclickfix (http://seeclickfix.com), fixmystreet or Fix This Tool. These applications allow citizens to report non emergency issues to their local governments and provide government agencies with many tools to help manage this information. [6] The main difference is that with the GreenCityStreets integrated approach, people using the Forum can also learn something about the problem they are commenting on, which should increase the quality of their contributions.

The Forum was launched with the BusMeister game in March 2011. The forum’s software functions worked well, but the forum did not attract any users outside the project team.

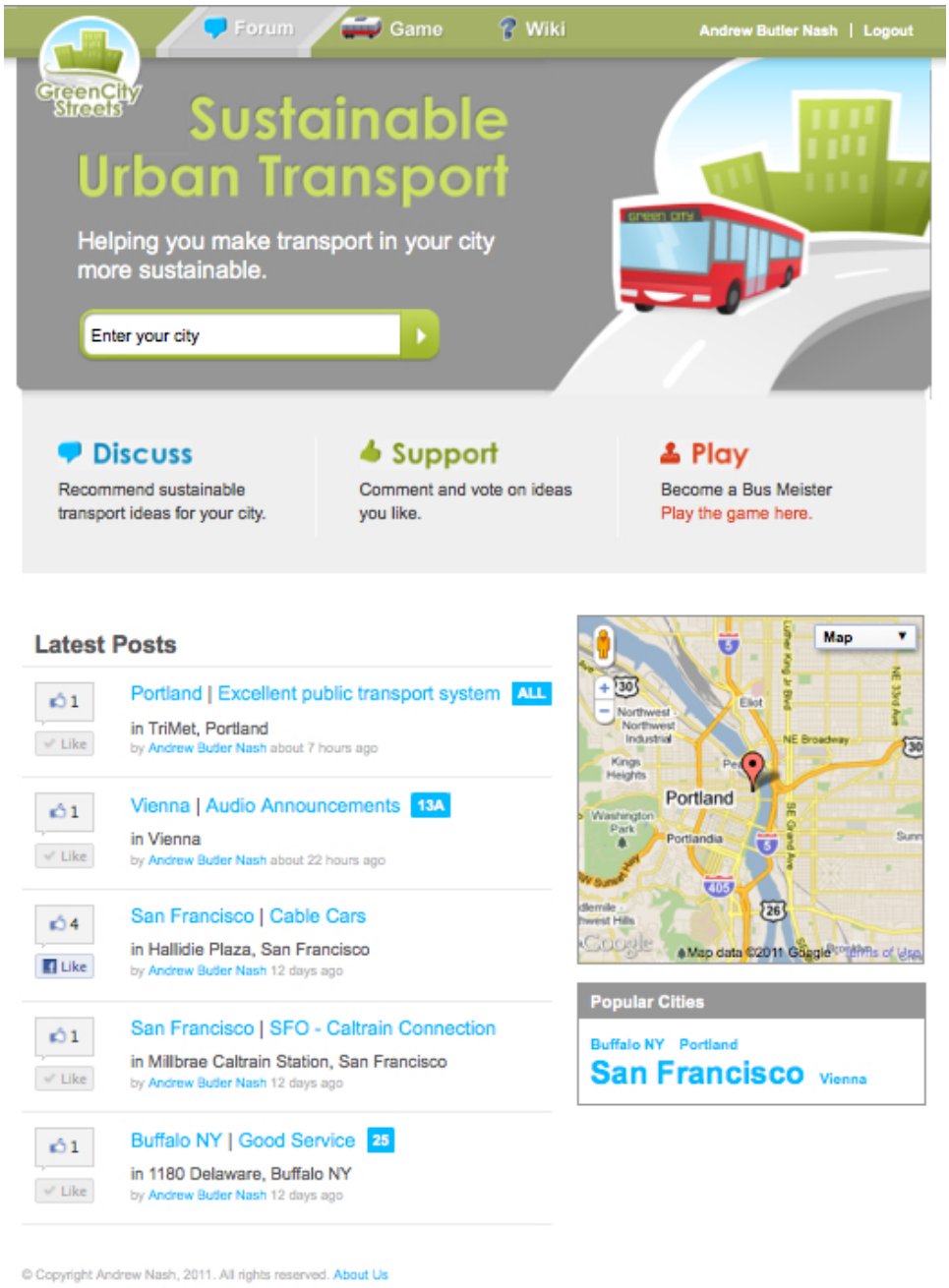

Figure 5: GreenCityStreets Forum screenshot.

There were several reasons why the application failed to attract users: first, it lacked critical mass – no one will use it if no one else is using it; second, it's difficult to achieve this critical mass without being embedded in a supportive eco-system so that users felt that their comments were actually being used by someone; and, third, users had to log-in via Facebook to fully use the forum features. These issues are described in more detail in Section 4 Application Evaluation.

3.5 GreenCityStreets Website

The GCS website is a standard website providing links to the game, forum, best practices library, blog and wiki. The website was placed on-line simultaneously with the final version the BusMeister game and the GCS Forum. The webpage itself has attracted 634 unique page views as of July 25, 2011.

4. GreenCityStreets Application Evaluation

The project goal was to test whether an integrated set of on-line applications could help improve public transport operations by educating local residents and providing them with a forum for expressing their ideas. This goal was partly accomplished: the application was created, tested and it worked, however the applications did not attract users and therefore the ultimate goal of improving public transport operations was not achieved.

While the project was not fully successful, a great deal of useful information about the approach was obtained and this information will assist in improving the application. This section summarizes the most important lessons learned.

4.1 Lack of a Client

The original idea was that the game alone would attract people and encourage them to start and participate in local forums to discuss public transport improvements in their cities. In fact the game and applications did not attract enough people to achieve this goal.

In retrospect it seems naive to have thought that the game alone could attract sufficient people to reach critical mass, but this is a common mistake. The huge amount of publicity for successful social games (e.g. Farmville) makes game development appear easy.

The solution to this problem is to develop the application for a particular client. A client would have provided several advantages: (1) more publicity; (2) more resources and focus for the project; and, (3) a supportive eco-system (i.e. someone who will do something with forum ideas). A variety of organizations could be good clients for the application including public transport agencies and local advocacy groups.

4.2 GreenCityStreets is an Innovative Concept

An important reason for not having a client is that the idea of using an on-line application to create and nurture relationships with customers is difficult for all but the most progressive private businesses, introducing these ideas in the public sector is extremely hard. [*13*]

In fact, the project team met with Vienna's public transport operator during application development and the agency considered buying the application. Their main goal was to use it as part of their Facebook presence, essentially giving visitors something to do (a game to play) when they visit the website. They were fairly unenthusiastic about using the application to collect ideas and comments from customers; they felt that this would add to their work (responding) and that they should not support a forum where people would complain in public about their service.

This example is not at all meant as a criticism of the Vienna public transport agency. The agency's reasons for not using the application are easy to understand and are, in fact, key arguments almost all companies use for not getting more involved in social network based customer input programs.

However, it's also clear that some innovative companies have been very successful using this approach to improve their products and services by making them more efficient and attractive. There is a great need for improvement in public transport, this approach could be part of the answer.

Finally, it's important to remember that new social networking and information technologies are making it easier for "outsiders" to create applications that could influence the business. Far better for public agencies to be proactive; creating their own applications so that they position themselves as innovative agencies and obtain data that can help them improve their operations.

4.3 Content for Best Practices Library

The best practices library is intended to present information about how to make public transport more efficient and attractive. There is a huge amount of information about this subject already available on the internet, the GreenCityStreets objective was to *organize* this information so that it would be easily available and understandable to non-professionals. The organizing concept was: "Here are six things you can do to make public transport work better." The wiki would allow users to get a simple introduction to the idea, but be linked to other pages with more details.

It proved very difficult to get people to add information to the wiki best practices library. One volunteer created a great deal of content, but he did this as part of a practical experience project. Several others added information about their specific projects (e.g. information about implementing a public transport priority traffic signal program), but most of the information added to the wiki was created by the author.

The main problem is that very few people are interested in providing information for a website that won't be seen. Of course this is a self-fulfilling prophecy, if no one adds information then no one will go to the site, etc. Websites need to reach a critical mass before they become popular. The hope was that professionals would contribute to the best practices library as a way of publicizing their research and projects. Ultimately the wiki could provide an up-to-the-minute literature review of the latest research.

The way to solve this problem is to link the best practices library to an organization or a research project. An organization would fill the wiki with content it had already developed (perhaps from a literature review) and provide editors to control the quality of information. Once critical mass was reached the wiki would become attractive to others who would see it as a way of publicizing their work.

Interestingly, OpenPlans experimented with a project called StreetsWiki [6] but, due to a reprioritization of resources, stopped its direct involvement in the project. One of the problems with Streetswiki was its huge mixture of article subjects, which, given the organization's goals makes sense, but which creates a significant administrative burden. In contrast the GreenCityStreets wiki was focused on one specific subject (techniques for improving public transport); this would make it an ideal candidate for being created as part of the dissemination effort for a moderately sized research project.

4.4 Difficulty Playing BusMeister

Creating a fun game is difficult. Creating a fun game designed to teach players about a technical subject is even harder. Section 3.3 summarizes some of the difficulties experienced in designing the BusMeister game.

The overwhelming majority of comments received on BusMeister was that the game was too difficult to play at the beginning. This meant that the user interface was not sufficiently clear, attractive and easy to use, and that the game progression did not provide sufficient encouragement to keep playing.

These problems meant that many people were turned-off in the first level and did not get far enough into the game for it to become interesting; players who did master the interface and kept playing to about level 5 were much more enthusiastic about the game, finding it to be interesting and exciting. Figure 6 illustrates some of the bus settings features in BusMeister, explaining all these features is difficult.

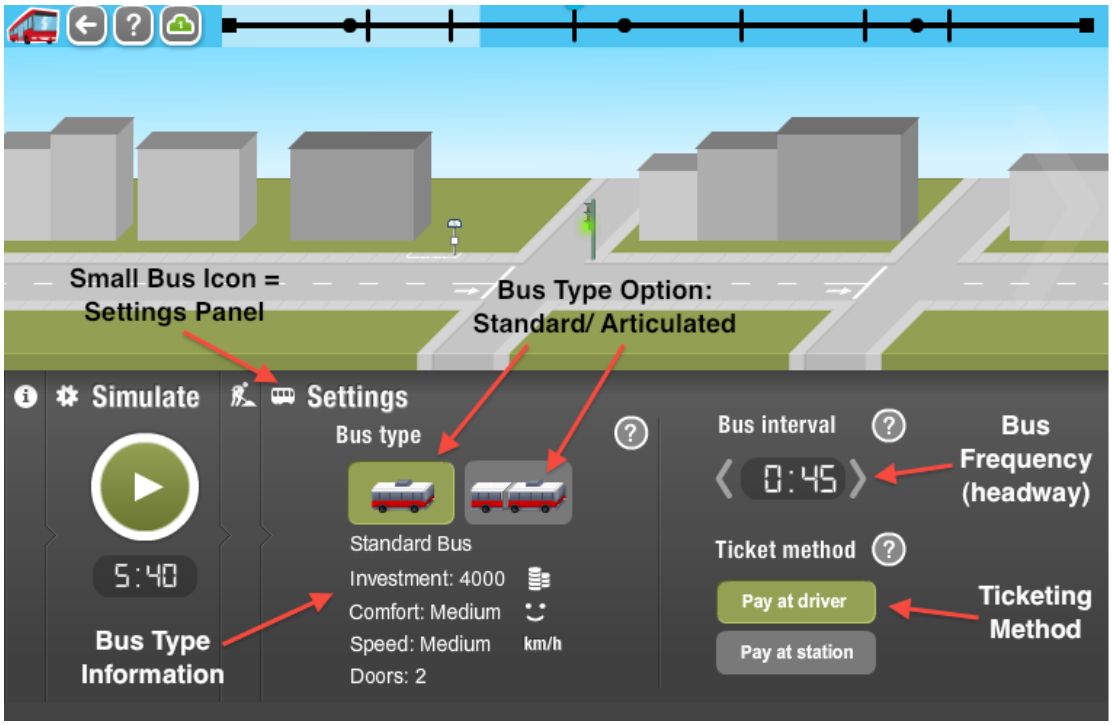

Figure 6: BusMeister bus settings options, annotated screenshot.

The feedback clearly showed that BusMeister's user interface and progression needed to be improved. The improvement process would use detailed evaluation and player feedback to identify specific changes, revise the game and repeat the evaluation/revision process until the game was sufficiently attractive. One interesting technique is watching people (who know nothing about the game) play to learn where they are having difficulties. Unfortunately this type of detailed feedback-revision process was beyond the project budget.

A further complication in the game development was technology. The game was created using Adobe Flash and therefore could not be played on all devices (e.g. Apple iPad).

This reduced interest in the game for a potentially ideal audience (i.e. bus riders on buses).

4.5 Facebook Limitations

A shortcoming in the prototype GreenCityStreets Forum application is the need to use Facebook to fully participate. Using the Facebook interface made it possible to develop a full-functioned forum application for the research project, but meant that active participation is limited to Facebook members.

While there are over 700 million Facebook members (over 50% participation in many countries), there are still many people who refuse to join Facebook due to privacy concerns or for ideological reasons. This limits the forum participation; importantly, generally more older people refuse to join Facebook than younger people, so information in the forum could also be biased.

Using Facebook for the forum was appropriate for the prototype, but in a real application (e.g. for a public transport agency), the forum should be hosted on a private server to allow non-Facebook users to participate, but also so that the organization could use the information generated more easily.

On the other hand, given Facebook's popularity it would be a mistake to neglect Facebook in future versions of the forum or other parts of GreenCityStreets. What's needed are well designed applications that can be used by Facebook and non-Facebook users alike.

A good example of this integration is the way the BusMeister game is handled: there players could log-in directly via the GreenCityStreets server or via Facebook.

4.6 Better Integrated Website

The GreenCityStreets website provides links to the main applications. The applications themselves are hosted on other websites (e.g. wikispaces). The use of outside server applications simplifies the process of developing a prototype application, and was therefore suitable for this project, but it also adds complication and reduces the ability to create a strong internet presence. If the application is developed for use by a specific agency or organization, the website and applications should be fully integrated.

5. Conclusions and Recommendations

The GreenCityStreets project succeeded in developing and placing on-line an integrated application designed to help enable citizens to learn about improving public transport and to suggest and support ideas for improving their local public transport services. Many people used the prototype application and provided feedback for use in identifying problems and potential solutions.

Unfortunately the project did not succeed in achieving its ultimate objective of creating an active social network actually using the application to improve their local public transport services. The researchers plan to refine the prototype based on the feedback to create applications that are more successful at achieving this objective.

The ideas for improving the prototype are outlined above (Lessons Learned), but the research also identified general problems that need to be addressed when developing similar applications:

- ***It's harder than it seems.*** Good websites, social networks and games may look simple, but they require very careful planning and implementation. The researchers were highly optimistic going into the project and underestimated the resources and expertise needed.
- ***You need a customer.*** Customers provide resources, no nonsense feedback and more importantly a clear purpose. The lack of a clear customer was a serious problem for GreenCityStreets.
- ***You need users.*** Stating the obvious but too often forgotten especially as participants start getting more involved in the technology of a particular application. Addressing the first two points above is a good start to attracting users.

The researchers continue to believe that the GreenCityStreets approach of combining education with social networking tools to create committed advocates for improved public transportation makes sense, but the prototype application needs to be improved to achieve this goal.

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References

[1] Kamensky, John M.; Rethinking the role of Citizens in a Gov 2.0 World; in The Business of Government, Spring 2010; IBM Corporation; available at: http://www.businessofgovernment.org/article/rethinking-role-citizens-gov-20-world accessed July 25, 2011.

[2] Howard, Alex; A refresh for open government in British Columbia; O'Reilly Radar, July 26, 2011; available at: http://radar.oreilly.com/2011/07/british-columbia-open-government-data.html accessed July 27, 2011.

[3] Nash, Andrew; Public Decision Making for the Caltrain Downtown San Francisco Extension Project; Transportation Research Record #1571, March 1997.

[4] Shoup, Donald; The High Cost of Free Parking; APA Planners Press, 2005.

[5] http://en.wikipedia.org/wiki/Customer_relationship_management accessed July 25, 2011.

[6] Nash, Andrew; Web 2.0 Applications for Improving Public Participation in Transport Planning; Conference Proceedings, Transportation Research Board Annual Meeting 2010, Washington D.C., 2010. Available at:

http://www.andynash.com/nash-publications/2009-Nash-Web2forPT-14nov09.pdf accessed July 25, 2011.

[7] Brown, Lloyd D.; Web 2.0 Tools for Customer Communications, Strategies and Practice at the Washington State Department of Transportation; Transportation Research Board, TR News 271, November-December 2010; pp 18-25.

[8] Nash, Andrew; An Integrated Web 2.0 Approach for Improving Public Transport; submitted for 2011 TRB Annual Meeting; July 14, 2010. Available at: http://www.andynash.com/nash-publications/2010-Nash-PTweb2appsTRB11-14july2010.pdf accessed July 25, 2011.

[9] Nash, Andrew; ITS 2.0 User-based Planning and Implementation (Presentation); CIVITAS Forum 2010; Malmo Sweden; 29 September 2010. Available at: http://www.andynash.com/nash-publications/2010-Nash-CivitasF10-ITS2.pdf accessed July 25, 2011.

[10] City of Vienna, ZIT: http://www.zit.co.at/fileadmin/user_upload/ZIT/Foerderungen/Calls_Archiv/Aktuelle_Calls/Die_Stadt_2020/C2020_Endbericht.pdf accessed July 25, 2011.

[11] http://c2.com/doc/etymology.html accessed July 25, 2011.

[12] Poplin, Alenka; Games and Serious Games in Urban Planning: Study Cases; available at: https://www.hcu-hamburg.de/fileadmin/documents/Professoren_und_Mitarbeiter/Alenka_Poplin/Poplin_article_CTP_2011_final.pdf accessed July 31, 2011.

[13] Judd, Nick; In Search of Ideas: How Counties and Towns are Trying to Tap Citizens' Smarts; blog posting: Personal Democracy Forum, TechPresident; available at: http://techpresident.com/blog-entry/search-ideas-how-counties-and-towns-are-trying-tap-citizens-smarts# accessed July 25, 2011.